

mode contemplated for carrying out this disclosure, but that the disclosure will include all embodiments falling within the scope of the appended claims.

1. A latch for latching two surfaces, comprising:
  - a latch comprising an engageable portion;
  - a seal structure comprising an active material, wherein the active material is effective to undergo a change in shape in response to an activation signal, wherein the change in shape causes the seal structure to sealingly and latchingly engage the engageable portion;
  - an activation device in operative communication with the active material adapted to provide the activation signal, and
  - a controller in operative communication with the activation device.
2. The latch according to claim 1, wherein the change in shape comprises increasing a diameter of the seal structure, wherein the increase in diameter engages the engageable portion.
3. The latch according to claim 1, wherein the active material comprises a shape memory alloy, ferromagnetic shape memory alloy, a shape memory polymer, a piezoelectric material, an electroactive polymer, a magnetorheological fluid, a magnetorheological elastomer, an electrorheological fluid, a composites of one or more of the foregoing materials with non-active material, or a combination comprising at least one of the foregoing materials.
4. The latch according to claim 1, further comprising a sensor in operative communication with the controller.
5. The latch according to claim 1, wherein the activation signal comprises an electric current, a temperature change, a magnetic field, a mechanical loading or stressing and combinations comprising at least one of the foregoing signals.
6. A latch for latching a first surface to a second surface, comprising:
  - a first surface comprising a first member extending from the first surface, wherein the first member comprises an active material, wherein the active material is effective to undergo a change in shape in response to an activation signal;
  - a second surface comprising a second member extending from the second surface, wherein the second member comprises the active material, and wherein the second surface and the second member are positionally disposed in an opposing relationship to the first surface and the first member;
  - an activation device in operative communication with the active material adapted to selectively provide an activation signal to the active material, wherein the activation signal effects a change in a shape of the active material and engages the first member with the second member; and
  - a controller in operative communication with the activation device.
7. The latch according to claim 6, wherein the active material comprises a shape memory alloy, a ferromagnetic shape memory alloy, a piezoelectric material, an ionic

polymer metal composite, a magnetorheological elastomer, and combinations comprising at least one of the foregoing materials.

8. The latch according to claim 6, wherein the change in shape comprises a change of a curvilinear orientation to a substantially straight shape.

9. The latch according to claim 6, further comprising a sensor in operative communication with the controller.

10. The latch according to claim 6, wherein the activation signal comprises an electric current, a temperature change, a magnetic field, a mechanical loading or stressing and combinations comprising at least one of the foregoing signals.

11. The latch according to claim 6, wherein the second member active material is the same as the first member active material.

12. The latch according to claim 6, wherein the second member active material is different from the first member active material.

13. A latch for latching two surfaces, comprising:

- a first surface comprising a first member extending from the first surface, wherein the first member comprises an active material effective to undergo a change in shape in response to an activation signal;

- a seal structure formed of an elastic material disposed on a second surface, wherein the seal structure and second surface are aligned with the first member and first member such that the first member is in operative communication with the seal structure;

- an activation device adapted to selectively provide the activation signal to the active material, wherein the activation signal effects a change in a shape of the first member to sealingly latch the seal structure against the first member; and

- a controller in operative communication with the activation device.

14. The latch according to claim 13, wherein the activation signal comprises an electric current, a temperature change, a magnetic field, a mechanical loading or stressing and combinations comprising at least one of the foregoing signals.

15. The latch according to claim 13, wherein the active material comprises a shape memory alloy, a ferromagnetic shape memory alloy, a piezoelectric material, an ionic polymer metal composite, a magnetorheological elastomer, and combinations comprising at least one of the foregoing materials.

16. The latch according to claim 13, wherein the change in shape comprises a change of a curvilinear orientation to a substantially straight shape.

17. The latch according to claim 13, wherein the seal structure comprises the active material, wherein the change in shape of the seal structure active material volumetrically expands the seal structure.

18. A process for selectively latching two surfaces, comprising:

- positioning a first member in a latching relationship to a second member, wherein the first member comprises an active material adapted to undergo a change in shape in response to an activation signal, wherein the change in